in many cases obtained by calculations beyond the grasp of the less advanced pupils; and the Translators have considerably improved what was already good by several Appendices, among which one of the most important is that on Thomson's electrometer. Some preliminary sections are devoted to the reduction of observations made with the mirror and scale to angular measure, to the determination of the position of equilibrium and time of oscillation of a magnetic needle and similar topics, while the methods of reading the various magnetometers and galvanometers, and the measurement of resistance and electromotive force, are afterwards discussed.

On the whole the principal fault we have to find with the book is a want of fulness, especially in the earlier portions. It aims at supplying a want already felt, and which will become still more pressing as the number of those who make some progress in the study of Natural Science increases, and we are not aware of the existence of any manual which gives the information contained in it in an equally compact and handy form; while the tables, thirty in number, which fill the concluding pages, will often save time and trouble to those engaged in laboratory work. Although, then, as we have already pointed out, we consider it capable of very considerable improvement, yet probably most teachers of Experimental Physics will obtain some useful hints from its perusal, even if they do not adopt it as a text-book for their pupils.

A. R.

OUR BOOK SHELF

Pheasants for Coverts and Aviaries. By W. B. Tegetmeier, F.Z.S. (London: Horace Cox. 1873.)

ANY work on animals which appeals to so many different human weaknesses as the Pheasants, must be popular if the least effort has been made to do the subject justice. The one before us has merits which make it peculiarly acceptable. It is by the hand of an author who has devoted his life to the careful study of the natures and habits of the Gallinaceous birds and Pigeons, and who has long since made himself well known by works on some of the genera, which have become the standard literature of the points on which they treat. In the handsome volume before us Mr. J. W. Wood's excellent and truthful illustrations add greatly to its value, though the absence of coloration has made it more than difficult in some cases to produce an approach to the gorgeous appearance of some of the species depicted. Among those that suffer most from this deficiency, are the Japanese Pheasant (*Phasianus versicolor*), whose chief beauty consists in the richness and delicacy of the shades of its plumage, and the Golden Pheasant (*Thaumelia picta*), with its ally, the Amherst Pheasant (*T. amherstiæ*), whose resplendent hues even the best artist finds it difficult to represent. The Reeves' Pheasant (*P. reevesii*), and the Eared Pheasant (*Crossoptilon mantchuricum*), however, form excellent and most truthful pictures, colours in them not being such important features. Mr. Tegetmeier, besides describing each of those species which are the love of the sportsman and the pride of the aviary, devotes the earlier part of his work to the discussion of points of great practical interest. After a short history of the Pheasants as a family, from which it is clear that they were introduced into this country from Asia Minor, the native home of the common Pheasant (*P. colchicus*), as early as the reign of King Harold, and probably by the Romans, a series of chapters is given on the management of the bird in preserves and in confinement, together with an account of the diseases to which it is most liable. These are replete with practical detail that must be most valuable to the many who spend such large sums on preserving game, and to those who have the actual superintendence of the coverts themselves. Particular attention is drawn to the great difference between birds, like the common Fowl (*Gallus bankiva*), which are capable of domestication in the true sense of the word, and the Pheasants, which, though individuals are frequently known to become tame, can never be really domesticated; even the young ones taking to the woods on the earliest opportunity, whilst the opposite inherent peculiarities of the poultry have given rise to the proverb—"Curses, like chickens, come home to roost." Altogether this work supplies a long-felt want, and its perusal will well repay anyone who takes it up.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.*]

Wasps

PERHAPS it may be of interest to some of your readers, who make entomology their study, to know that the wasps in a nest about a mile from this were still tolerably active on the 13th of this month, when my attention was attracted by the loud buzzing of three or four wasps at the entrance, apparently ventilating it with their wings after the manner of bees. I again visited the place on the 23rd. There were at first no signs of life outside; but stamping on the ground above caused a considerable number to come out after a minute or a minute and a half and hover in the air above the entrance. I attribute this unusual circumstance to the mildness of the season (the minimum temperatures having been 26° in October, 25° in November, and 29° on the 10th and 11th of December, and the 13th having been mild, and so also the 23rd) and the bad conducting power of the nearly cut out peat bog in which the nest was situated.

Birr Castle, Parsonstown, Dec. 24, 1873 ROSSE

The Potato Disease and Lord Cathcart's Prize

NO one acquainted with botanists and botanical science can feel surprised at the decision of the committee in this matter, and it must be confessed that, however well meant, the offer of the 100*l.* prize was a great mistake which has only ended in producing ninety-four unsatisfactory essays and the loss of a year.

Little else could have been expected, for the Council of the Royal Agricultural Society must surely be aware that the men (in this country at least) who are competent to write anything *new* on the subject could certainly be counted in units, and these men could not enter into the competition for more reasons than one, not the least being the loss of status such a proceeding would entail.

It appears to me that the committee have even now hardly hit the right nail upon the head in recommending a grant of money to "some competent mycologist" to investigate the life history of the fungus during a certain period of its life. If the investigation is carried on by any *one man* it is sure to end in failure. It would be far better for the committee to recommend that *five or six* competent botanists should each write an essay on the subject from his own point of view, each essay to be published in the Society's journal. There are many reasons why this would be best. I will give one. Payen has figured and described certain ciliated bodies found in spent potatoes, and which Berkeley and other botanists have looked upon as the probable resting-spores of the *Peronospora.* Montagne has referred these same bodies to the *Sepedoniei*, whilst I am by no means sure that the objects do not belong to the *Stilbacei*, and are no other than *Volutella ciliata.* However this may be, I have met with the last in spent potatoes in immediate connection with the *Peronospora* itself. Where competent observers differ in opinion it is better to get the views of all. It would be very unwise to restrict the observations to any particular period of the growth of the plant, and very little would be added to our knowledge were the resting spores themselves found; for, resting spores or no resting spores, it is an ascertained fact that the living

© 1874 Nature Publishing Group

fungus has a season of rest underground, and whether in the condition of resting spores, a sclerotioid mass or a number of myceloid threads, the principal fact remains that the fungus lives through the winter in a state of rest. As to certain potatoes being able to resist the disease, I shall shortly be able to show that whilst certain breeds of potatoes *entirely resist* it in one place, they fall a *ready prey* to it in another.

Hence any experiments carried on in one place by one person, though valuable in themselves, must be inconclusive and imperfect.

The great question is, "How can the disease be evaded or destroyed?" and this can only be answered, if answered at all, by men who thoroughly know the fungus and its allies.

WORTHINGTON G. SMITH

The Denudation of Limestone Hills of Sarawak

THERE is an agency in the denudation of the limestone rocks of Saràwak which I do not think has been noted, but which is very efficient locally in its operation.

The limestone in question is a dark-blue compact rock (probably the oldest stratified formation in this part of Borneo) full of fissures and joints, and forming hilly tracts in Saràwak proper and Samarahan. It is a not uncommon occurrence during periods of unusual drought for the jungle clothing these hills to take fire in some unascertained way, and for large tracts of the vegetation to be destroyed before the conflagration dies out or is extinguished by rains. Such an accident took place two years ago on the Jambusan hill, and a short time previously on Gunong Añgus (whence the present name, "Burnt Hill"), and on Marajah, a large hill near Bidi; and I have been informed by natives that similar fires are known at the head of the Undup, where I have observed from a distance extensive masses of limestone.

When such a fire takes place, not only may we take for granted that a great deal of surface-rock is more or less calcined, so as to be easily removable by the heavy tropical rains; but, there being no covering of soil to speak of, and the exterior rock having been merely bound together by a matted network of roots and creepers, large masses of rock—long loosened by weathering, or freshly detached by the expansion of air and water in the fissures—keep falling from the higher parts of the hill as their supports are burnt away; whilst groups of burning trees go crashing down the scarps, assisting the work of degradation by collision with the inequalities in their paths.

It is, however, subsequently to the fire that its most important effects become apparent. For the next year or two fresh dislodgments of rock will be continually taking place, particularly when, after the almost daily rains, the sun shines out, striking on the bared rock with rays of tropical fervour. Many years elapse before sufficient soil collects in the crevices of the rock to support vegetation; and until the whitened face of the hill is once more shrouded in jungle, it remains immediately exposed to steady sub-aërial denudation; so that, bearing in mind the immense rainfall, the abundance of fissures and joints in the stone, and its solubility, I am inclined to believe that the degradation of these hills which goes on during the interval before they again become efficiently shielded with vegetation, is comparable to centuries of waste of the same rock under ordinary conditions.

Were the limestone hills of Saràwak more gently rounded and less scarped, their destruction through the agencies above described might not be noteworthy; but, owing to the frequency of lines of old sea-cliffs and mural precipices, nearly the whole of the detached rock passes at once to the bases of the hills, where it is again attacked by the rains, assisted now by running streams or standing water.

Saràwak, July 1 A. HART EVERETT

An Appeal to our Provincial Scientific Societies

NOW that our provincial museums are yearly increasing in number, it appears desirable to draw the attention of the provincial scientific societies to their importance as the centres for the private collections illustrative of the local geology, natural history, and archæology which from time to time come into the market. We are entirely indebted to private energy for any British collections which we possess. How lamentable then is it that there is no public system for centralising them in our public museums, and thus saving them from dispersion by their passing into the hands of dealers or private collectors, or into the possession of foreign or metropolitan museums. Every year witnesses such losses, which are regarded with complete indifference by our local representatives of Science. It is unaccountable that not one of our provincial Societies has as yet had the public spirit, energy, or foresight to see the importance of this work and of raising a fund for the purpose of ultimately securing such collections for the district.

It is a question of national scientific importance. The collections which are formed during the present century may be said to represent the "pick" of the country. By-and-by, when localities are worked out, and the rarity and value of specimens greatly increased, we may awaken to a sense of the mistake we have made in not devoting our energies less to palæontological literature, and more to the formation of complete and exhaustive local series and collections, and thus smoothing the path of, and providing interest for, the investigators of our fossil and recent flora and fauna.

Such is the lack of originality displayed in this country, and precedent is so blindly followed, that everywhere we find narrow scientific cliques, so-called "Societies," apparently formed merely for the sake of having social gatherings and by means of a local periodical facilitating the cheap publication of the papers of such as contribute.

The energy thus expended is almost entirely thrown away. Indeed, so far as the journals of these "societies" are concerned, these societies are mere hindrances to the progress of Science, for, did they not exist, the papers which appear in their obscure journals (or "napkins," in which the "talents" of these societies lie hid) might be contributed to such as have a general circulation, and thus benefit the world at large. I would most earnestly impress on our scientific Societies the great importance of devoting their energies more to the formation and preservation of complete and exhaustive local collections. With such division of labour how much more accurate and rapid would be the progress of the sciences of Geology and Biology.

S. G. P.

The Killing of Entomological Specimens

A NOTE in a recent number of NATURE, reminds me of some experiments I made about 15 years ago upon the action of the vapours of volatile liquids (hydrocarbons, chloroform, &c.) on insects, my object being to find an expeditious and painless method of killing entomological specimens. Several vapours produced insensibility from which the insects recovered more or less rapidly, but bisulphide of carbon vapour killed them effectually.

My method of applying it was to place a few layers of blotting paper, lint, or cotton wool, on the bottom of a wide-mouthed bottle, pill box, or other convenient place of execution; then to pour a few drops of the liquid upon this and confine the insect in the receptacle, which on account of the great density of the vapour need not be very accurately closed. The action of the vapour must be continued a few minutes after signs of life have disappeared, or the insect will recover.

The most obstinate of beetles succumb without a struggle, and the most delicate of moths or butterflies are uninjured, provided the liquid itself does not touch them. Butterflies may be killed after they are pinned out, by simply placing a little cotton wool soaked with the bisulphide in a box near to them.

W. MATTIEU WILLIAMS

Lecture Experiments

THE result of convection in a liquid, tending to cause the upper part of the mass to be constantly at a higher temperature than the lower, may be well illustrated by the two following experiments:—

Two large glass beakers are placed in front of a sheet of white paper, one of them filled with cold the other with boiling water. A boiling-tube filled with freshly prepared starch solution which has been coloured deep blue by gradual addition of aqueous solution of iodine, and has then been heated until the colour just disappears, is plunged into the beaker of cold water; the blue colour, caused to return by the cooling of the solution, will appear first at the bottom of the tube and then gradually creep upwards, showing that the lower part of the heated liquid first becomes sufficiently cooled to cause the return of the colour. In order to insure the disappearance of this colour by heat, an excess of iodine must be carefully avoided.

In the boiling water contained in the other beaker is immersed a boiling-tube filled with the blue liquid obtained by adding

© 1874 Nature Publishing Group